

PCT

ANTRAG

Der Unterzeichnete beantragt, daß die vorliegende internationale Anmeldung nach dem Vertrag über die internationale Zusammenarbeit auf dem Gebiet des Patentwesens behandelt wird.

Vom Anmeldeamt auszufüllen

Internationales Aktenzeichen

Internationales Anmeldedatum

Name des Anmeldeamts und "PCT International Application"

Aktenzeichen des Anmelders oder Anwalts (falls gewünscht)
(max. 12 Zeichen) 40 659

Feld Nr. I BEZEICHNUNG DER ERFINDUNG

Verfahren zum Abfordern von untertägig abgebautem Material sowie Vorrichtung zur Durchführung dieses Verfahrens

Feld Nr. II ANMELDER

☐ Diese Person ist gleichzeitig Erfinder

Name und Anschrift: (Familienname, Vorname; bei juristischen Personen vollständige amtliche Bezeichnung. Bei der Anschrift sind die Postleitzahl und der Name des Staats anzugeben. Der in diesem Feld in der Anschrift angegebene Staat ist der Staat des Sitzes oder Wohnsitzes des Anmelders, sofern nachstehend kein Staat des Sitzes oder Wohnsitzes angegeben ist.)

VOEST-ALPINE Bergtechnik

Gesellschaft m.b.H.

Alpinestraße 1

A-8740 Zeltweg, AT

Telefonnr.:

Telefaxnr.:

Fernschreibnr.:

Registrierungsnr. des Anmelders beim Amt:

Staatsangehörigkeit (Staat):

AT

Sitz oder Wohnsitz (Staat):

AT

Diese Person ist Anmelder für folgende Staaten:

☐ alle Bestimmungsstaaten

☒ alle Bestimmungsstaaten mit Ausnahme der Vereinigten Staaten von Amerika

☐ nur die Vereinigten Staaten von Amerika

☐ die im Zusatzfeld angegebenen Staaten

Feld Nr. III WEITERE ANMELDER UND/ODER (WEITERE) ERFINDER

Name und Anschrift: (Familienname, Vorname; bei juristischen Personen vollständige amtliche Bezeichnung. Bei der Anschrift sind die Postleitzahl und der Name des Staats anzugeben. Der in diesem Feld in der Anschrift angegebene Staat ist der Staat des Sitzes oder Wohnsitzes des Anmelders, sofern nachstehend kein Staat des Sitzes oder Wohnsitzes angegeben ist.)

GROß Thomas

Hauergasse 10/2/7

A-8740 Zeltweg, AT

Diese Person ist:

☐ nur Anmelder

☒ Anmelder und Erfinder

☐ nur Erfinder (Wird dieses Kästchen angekreuzt, so sind die nachstehenden Angaben nicht nötig.)

Registrierungsnr. des Anmelders beim Amt:

Staatsangehörigkeit (Staat):

DE

Sitz oder Wohnsitz (Staat):

AT

Diese Person ist Anmelder für folgende Staaten:

☐ alle Bestimmungsstaaten

☐ alle Bestimmungsstaaten mit Ausnahme der Vereinigten Staaten von Amerika

☒ nur die Vereinigten Staaten von Amerika

☐ die im Zusatzfeld angegebenen Staaten

☐ Weitere Anmelder und/oder (weitere) Erfinder sind auf einem Fortsetzungsblatt angegeben.

Feld Nr. IV ANWALT ODER GEMEINSAMER VERTRETER; ODER ZUSTELLANSCHRIFT

Die folgende Person wird hiermit bestellt/ist bestellt worden, um für den (die) Anmeldervor den zuständigen internationalen Behörden in folgender Eigenschaft zu handeln als:

☒ Anwalt ☐ gemeinsamer Vertreter

Name und Anschrift: (Familienname, Vorname; bei juristischen Personen vollständige amtliche Bezeichnung. Bei der Anschrift sind die Postleitzahl und der Name des Staats anzugeben.)

Haffner Thomas M.

Schottengasse 3a

A-1014 Wien, AT

Telefonnr.:

+43-1-5332504

Telefaxnr.:

+43-1-5339250

Fernschreibnr.:

Registrierungsnr. des Anwalts beim Amt:

☐ Zustellanschrift: Dieses Kästchen ist anzukreuzen, wenn kein Anwalt oder gemeinsamer Vertreter bestellt ist und statt dessen im obigen Feld eine spezielle Zustellanschrift angegeben ist.

Feld Nr. V BESTIMMUNGEN

Die Einreichung dieses Antrags umfaßt gemäß Regel 4.9 Absatz a die Bestimmung aller Vertragsstaaten, für die der PCT am internationalen Anmeldedatum verbindlich ist, und insoweit verfügbar, für jede Art von Schutzrecht und sowohl für ein regionales als auch für ein nationales Patent.

Dennoch wird

- ☐ DE Deutschland nicht für ein nationales Schutzrecht bestimmt
- ☐ KR Republik Korea nicht für ein nationales Schutzrecht bestimmt
- ☐ RU Russische Föderation nicht für ein nationales Schutzrecht bestimmt

(Obenstehende Kästchen können angekreuzt werden, um die betreffenden Bestimmungen (unwiderruflich) auszuschließen, um zu vermeiden daß eine frühere nationale Anmeldung, deren Priorität beansprucht wird, nach nationalem Recht ihre Wirkung verliert. Siehe die Anmerkungen zu Feld Nr. V für die Folgen solcher nationalen Rechtsvorschriften in diesen und bestimmten anderen Staaten).

Feld Nr. VI PRIORITÄTSANSPRUCH

Die Priorität der folgenden früheren Anmeldung(en) wird hiermit in Anspruch genommen:

Anmeldedatum der früheren Anmeldung (Tag/Monat/Jahr)	Aktenzeichen der früheren Anmeldung	Ist die frühere Anmeldung eine:		
		nationale Anmeldung: Staat oder Mitglied der WTO	regionale Anmeldung:* regionales Amt	internationale Anmeldung: Anmeldeamt
Zeile (1) (10.12.2003) 10. Dezember 2003	A 1985/2003	AT		
Zeile (2)				
Zeile (3)				

- ☐ Weitere Prioritätsansprüche sind im Zusatzfeld angegeben.

Das Anmeldeamt wird ersucht, eine beglaubigte Abschrift der oben bezeichneten früheren Anmeldung(en) zu erstellen und dem internationalen Büro zu übermitteln (nur falls die frühere Anmeldung(en) bei dem Amt eingereicht worden ist (sind), das für die Zwecke dieser internationalen Anmeldung Anmeldeamt ist):

- ☐ sämtliche Zeilen ☒ Zeile (1) ☐ Zeile (2) ☐ Zeile (3) ☐ weitere, siehe Zusatzfeld

* Falls es sich bei der früheren Anmeldung um eine ARIPO-Anmeldung handelt, geben Sie mindestens einen Staat an, der Mitgliedstaat der Pariser Verbandsübereinkunft zum Schutz des gewerblichen Eigentums oder Mitglied der Welthandelsorganisation ist und für den oder das die frühere Anmeldung eingereicht wurde:

Feld Nr. VII INTERNATIONALE RECHERCHENBEHÖRDE

Wahl der internationalen Recherchenbehörde (ISA) (falls zwei oder mehr als zwei internationale Recherchenbehörden für die Ausführung der internationalen Recherche zuständig sind, geben Sie die von Ihnen gewählte Behörde an; der Zweibuchstaben-Code kann benutzt werden):

ISA /

Antrag auf Nutzung der Ergebnisse einer früheren Recherche; Bezugnahme auf diese frühere Recherche (falls eine frühere Recherche bei der internationalen Recherchenbehörde beantragt oder von ihr durchgeführt worden ist):

Datum (Tag/Monat/Jahr)

Aktenzeichen

Staat (oder regionales Amt)

Feld Nr. VIII ERKLÄRUNGEN

Die Felder Nr. VIII (i) bis (v) enthalten die folgenden Erklärungen (Kreuzen Sie unten die entsprechenden Kästchen an und geben Sie in der rechten Spalte für jede Erklärung deren Anzahl an):

Anzahl der
Erklärungen

- ☐ Feld Nr. VIII (i) Erklärung hinsichtlich der Identität des Erfinders :
- ☐ Feld Nr. VIII (ii) Erklärung hinsichtlich der Berechtigung des Anmelders, zum Zeitpunkt des internationalen Anmeldedatums, ein Patent zu beantragen und zu erhalten :
- ☐ Feld Nr. VIII (iii) Erklärung hinsichtlich der Berechtigung des Anmelders, zum Zeitpunkt des internationalen Anmeldedatums, die Priorität einer früheren Anmeldung zu beanspruchen :
- ☐ Feld Nr. VIII (iv) Erfindererklärung (nur im Hinblick auf die Bestimmung der Vereinigten Staaten von Amerika) :
- ☐ Feld Nr. VIII (v) Erklärung hinsichtlich unschädlicher Offenbarungen oder Ausnahmen von der Neuheitsschädlichkeit :

Feld Nr. IX KONTROLLISTE; EINREICHUNGSSPRACHE		
Diese internationale Anmeldung enthält:		Anzahl
(a) auf Papier, die folgende Anzahl Blätter:		
Antrag (inklusive Erklärungsblätter) :	3	
Beschreibung (ohne Sequenzprotokoll und/oder diesbezügliche Tabellen) :	7	
Ansprüche :	2	
Zusammenfassung :	1	
Zeichnungen :	2	
Teilanzahl :	15	
Sequenzprotokoll :		
diesbezügliche Tabellen :		
<i>(für beide, Anzahl der Blätter, soweit auf Papier eingereicht wird, unabhängig davon, ob zusätzlich auch in computerlesbarer Form eingereicht wird; siehe unter (c))</i>		
Gesamtanzahl :	15	
(b) <input type="checkbox"/> ausschließlich in computerlesbarer Form (Abschnitt 801(a)(i))		
(i) <input type="checkbox"/> Sequenzprotokoll		
(ii) <input type="checkbox"/> diesbezügliche Tabellen		
(c) <input type="checkbox"/> auch in computerlesbarer Form (Abschnitt 801(a)(ii))		
(i) <input type="checkbox"/> Sequenzprotokoll		
(ii) <input type="checkbox"/> diesbezügliche Tabellen		
Art und Anzahl der Datenträger (Diskette, CD-ROM, CD-R oder sonstige) auf denen sich befinden		
(i) <input type="checkbox"/> Sequenzprotokoll:		
(ii) <input type="checkbox"/> diesbezügliche Tabellen:		
<i>(zusätzliche eingereichte Kopien unter Punkt 9(ii) und/oder 10(ii) in der rechten Spalte angeben)</i>		
Abbildung der Zeichnungen, die mit der Zusammenfassung veröffentlicht werden soll (Nr.):		1
Dieser internationalen Anmeldung liegen die folgenden Unterlagen bei <i>(kreuzen Sie die entsprechenden Kästchen an und geben Sie in der rechten Spalte jeweils die Anzahl der beiliegenden Exemplare an)</i>		
1. <input checked="" type="checkbox"/> Blatt für die Gebührenberechnung		
2. <input type="checkbox"/> Original einer gesonderten Vollmacht		
3. <input type="checkbox"/> Original einer allgemeinen Vollmacht		
4. <input type="checkbox"/> Kopie der allgemeinen Vollmacht; Aktenzeichen (falls vorhanden):		
5. <input type="checkbox"/> Begründung für das Fehlen einer Unterschrift		
6. <input type="checkbox"/> Prioritätsbeleg(e), in Feld Nr. VI durch folgende Zeilennummer(n) gekennzeichnet:		
7. <input type="checkbox"/> Übersetzung der internationalen Anmeldung in die folgende Sprache:		
8. <input type="checkbox"/> Gesonderte Angaben zu hinterlegten Mikroorganismen oder anderem biologischen Material		
9. <input type="checkbox"/> Sequenzprotokoll in computerlesbarer Form <i>(Art und Anzahl der Datenträger)</i>		
(i) <input type="checkbox"/> Kopie ausschließlich für die Zwecke der internationalen Recherche nach Regel 13ter (und nicht als Teil der internationalen Anmeldung)		
(ii) <input type="checkbox"/> <i>(nur falls Felder (b)(i) oder (c)(i) in der linken Spalte angekreuzt wurden)</i> zusätzliche Kopien einschließlich, soweit zutreffend, einer Kopie für die Zwecke der internationalen Recherche nach Regel 13ter		
(iii) <input type="checkbox"/> zusammen mit entsprechender Erklärung, daß die Kopie(n) mit dem in der linken Spalte aufgeführten Sequenzprotokoll identisch ist		
10. <input type="checkbox"/> Tabellen in computerlesbarer Form im Zusammenhang mit Sequenzprotokoll <i>(Art und Anzahl der Datenträger)</i>		
(i) <input type="checkbox"/> Kopie ausschließlich für die Zwecke der internationalen Recherche nach Abschnitt 802(b-quater) (und nicht als Teil der internationalen Anmeldung)		
(ii) <input type="checkbox"/> <i>(nur falls Felder (b)(ii) oder (c)(ii) in der linken Spalte angekreuzt wurden)</i> zusätzliche Kopien einschließlich, soweit zutreffend, einer Kopie für die Zwecke der internationalen Recherche nach Abschnitt 802(b-quater)		
(iii) <input type="checkbox"/> zusammen mit entsprechender Erklärung, daß die Kopie(n) mit dem in der linken Spalte aufgeführten Tabellen identisch ist (sind)		
11. <input checked="" type="checkbox"/> Sonstige <i>(einzeln auflisten)</i> : Erlagscheinabschnitt.....		
Sprache, in der die internationale Anmeldung eingereicht wird:		deutsch
Feld Nr. X UNTERSCHRIFT DES ANMELDERS, DES ANWALTS ODER DES GEMEINSAMEN VERTRETERS		
<i>Der Name jeder unterzeichnenden Person ist neben der Unterschrift zu wiederholen, und es ist anzugeben, sofern sich dies nicht eindeutig aus dem Antrag ergibt, in welcher Eigenschaft die Person unterzeichnet.</i>		
Haffner Thomas M.		

Vom Anmeldeamt auszufüllen	
1. Datum des tatsächlichen Eingangs dieser internationalen Anmeldung:	2. Zeichnungen: <input type="checkbox"/> eingegangen: <input type="checkbox"/> nicht eingegangen:
3. Geändertes Eingangsdatum aufgrund nachträglich, jedoch fristgerecht eingegangener Unterlagen oder Zeichnungen zur Vervollständigung dieser internationalen Anmeldung:	
4. Datum des fristgerechten Eingangs der angeforderten Richtigstellungen nach Artikel 11(2) PCT:	
5. Internationale Recherchenbehörde <i>(falls zwei oder mehr zuständig sind)</i> : ISA /	6. <input type="checkbox"/> Übermittlung des Recherchenexemplars bis zur Zahlung der Recherchegebühr aufgeschoben
Vom Internationalen Büro auszufüllen	
Datum des Eingangs des Aktenexemplars beim Internationalen Büro:	

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) 40659

Box No. I TITLE OF INVENTION

Method for the Haulage of Subsurface-Mined Material as well as Device for Carrying out said method

Box No. II APPLICANT

☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

VOEST-ALPINE Bergtechnik
Gesellschaft m.b.H.
Alpinestrasse 1
A-8740 Zeltweg, Austria

Telephone No.

Facsimile No.

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:

Austria

State (that is, country) of residence:

Austria

This person is applicant
for the purposes of:

☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

GROSS Thomas
Hauergasse 10/2/7
A-8740 Zeltweg, Austria

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is
marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

Germany

State (that is, country) of residence:

Austria

This person is applicant
for the purposes of:

☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common
representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Haffner Thomas M.
Schottengasse 3a
A-1014 Wien, Austria

Telephone No.

+43-1-5332504

Facsimile No.

+43-1-5339250

Teleprinter No.

Agent's registration No. with the Office

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. V DESIGNATIONS

The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.

However,

- ☐ DE Germany is **not designated** for any kind of national protection
- ☐ KR Republic of Korea is **not designated** for any kind of national protection
- ☐ RU Russian Federation is **not designated** for any kind of national protection

(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the ceasing of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application:* regional Office	international application: receiving Office
item (1) (10.12.2003) December 10. 2003	A 1985/2003	Austria		
item (2)				
item (3)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☐ all items ☒ item (1) ☐ item (2) ☐ item (3) ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA /

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year) Number Country (or regional Office)

Box No. VIII DECLARATIONS

The following **declarations** are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

Number of
declarations

- | | | |
|---|--|---|
| <input type="checkbox"/> Box No. VIII (i) | Declaration as to the identity of the inventor | : |
| <input type="checkbox"/> Box No. VIII (ii) | Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent | : |
| <input type="checkbox"/> Box No. VIII (iii) | Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application | : |
| <input type="checkbox"/> Box No. VIII (iv) | Declaration of inventorship (only for the purposes of the designation of the United States of America) | : |
| <input type="checkbox"/> Box No. VIII (v) | Declaration as to non-prejudicial disclosures or exceptions to lack of novelty | : |

Box No. IX CHECK LIST; LANGUAGE OF FILING																																																							
<p>This international application contains:</p> <p>(a) in paper form, the following number of sheets:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">request (including declaration sheets) :</td> <td style="width: 20%; text-align: right;">3</td> </tr> <tr> <td>description (excluding sequence listing and/or tables related thereto) :</td> <td style="text-align: right;">7</td> </tr> <tr> <td>claims :</td> <td style="text-align: right;">2</td> </tr> <tr> <td>abstract :</td> <td style="text-align: right;">1</td> </tr> <tr> <td>drawings :</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Sub-total number of sheets :</td> <td style="text-align: right; border-top: 1px solid black;">15</td> </tr> <tr> <td>sequence listing :</td> <td></td> </tr> <tr> <td>tables related thereto :</td> <td></td> </tr> <tr> <td colspan="2"><i>(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)</i></td> </tr> <tr> <td>Total number of sheets :</td> <td style="text-align: right;">15</td> </tr> </table> <p>(b) <input type="checkbox"/> only in computer readable form (Section 801(a)(i))</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> sequence listing</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> tables related thereto</p> <p>(c) <input type="checkbox"/> also in computer readable form (Section 801(a)(ii))</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> sequence listing</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> tables related thereto</p> <p>Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the</p> <p><input type="checkbox"/> sequence listing:</p> <p><input type="checkbox"/> tables related thereto:</p> <p><i>(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)</i></p>	request (including declaration sheets) :	3	description (excluding sequence listing and/or tables related thereto) :	7	claims :	2	abstract :	1	drawings :	2	Sub-total number of sheets :	15	sequence listing :		tables related thereto :		<i>(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)</i>		Total number of sheets :	15	<p>This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">1. <input checked="" type="checkbox"/> fee calculation sheet</td> <td style="width: 20%; text-align: right;">:</td> </tr> <tr> <td>2. <input type="checkbox"/> original separate power of attorney</td> <td style="text-align: right;">:</td> </tr> <tr> <td>3. <input type="checkbox"/> original general power of attorney</td> <td style="text-align: right;">:</td> </tr> <tr> <td>4. <input type="checkbox"/> copy of general power of attorney; reference number, if any:</td> <td style="text-align: right;">:</td> </tr> <tr> <td>5. <input type="checkbox"/> statement explaining lack of signature</td> <td style="text-align: right;">:</td> </tr> <tr> <td>6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):</td> <td style="text-align: right;">:</td> </tr> <tr> <td>7. <input type="checkbox"/> translation of international application into (language):</td> <td style="text-align: right;">:</td> </tr> <tr> <td>8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material</td> <td style="text-align: right;">:</td> </tr> <tr> <td>9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers)</td> <td style="text-align: right;">:</td> </tr> <tr> <td style="margin-left: 20px;">(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) :</td> <td></td> </tr> <tr> <td style="margin-left: 20px;">(ii) <input type="checkbox"/> (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter :</td> <td></td> </tr> <tr> <td style="margin-left: 20px;">(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column :</td> <td></td> </tr> <tr> <td>10. <input type="checkbox"/> tables in computer readable form related to sequence listing (indicate type and number of carriers)</td> <td style="text-align: right;">:</td> </tr> <tr> <td style="margin-left: 20px;">(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application) :</td> <td></td> </tr> <tr> <td style="margin-left: 20px;">(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater) :</td> <td></td> </tr> <tr> <td style="margin-left: 20px;">(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column :</td> <td></td> </tr> <tr> <td>11. <input checked="" type="checkbox"/> other (specify): postal order</td> <td style="text-align: right;">:</td> </tr> </table>	1. <input checked="" type="checkbox"/> fee calculation sheet	:	2. <input type="checkbox"/> original separate power of attorney	:	3. <input type="checkbox"/> original general power of attorney	:	4. <input type="checkbox"/> copy of general power of attorney; reference number, if any:	:	5. <input type="checkbox"/> statement explaining lack of signature	:	6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):	:	7. <input type="checkbox"/> translation of international application into (language):	:	8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material	:	9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers)	:	(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) :		(ii) <input type="checkbox"/> (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter :		(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column :		10. <input type="checkbox"/> tables in computer readable form related to sequence listing (indicate type and number of carriers)	:	(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application) :		(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater) :		(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column :		11. <input checked="" type="checkbox"/> other (specify): postal order	:
request (including declaration sheets) :	3																																																						
description (excluding sequence listing and/or tables related thereto) :	7																																																						
claims :	2																																																						
abstract :	1																																																						
drawings :	2																																																						
Sub-total number of sheets :	15																																																						
sequence listing :																																																							
tables related thereto :																																																							
<i>(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)</i>																																																							
Total number of sheets :	15																																																						
1. <input checked="" type="checkbox"/> fee calculation sheet	:																																																						
2. <input type="checkbox"/> original separate power of attorney	:																																																						
3. <input type="checkbox"/> original general power of attorney	:																																																						
4. <input type="checkbox"/> copy of general power of attorney; reference number, if any:	:																																																						
5. <input type="checkbox"/> statement explaining lack of signature	:																																																						
6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):	:																																																						
7. <input type="checkbox"/> translation of international application into (language):	:																																																						
8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material	:																																																						
9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers)	:																																																						
(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) :																																																							
(ii) <input type="checkbox"/> (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter :																																																							
(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column :																																																							
10. <input type="checkbox"/> tables in computer readable form related to sequence listing (indicate type and number of carriers)	:																																																						
(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application) :																																																							
(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater) :																																																							
(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column :																																																							
11. <input checked="" type="checkbox"/> other (specify): postal order	:																																																						
<p>Figure of the drawings which should accompany the abstract: 1</p>	<p>Language of filing of the international application: german</p>																																																						
<p>Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE</p> <p><i>Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).</i></p> <div style="text-align: center; height: 100px; vertical-align: middle;"> <p>Haffner Thomas M.</p> </div>																																																							

For receiving Office use only	
<p>1. Date of actual receipt of the purported international application:</p>	<p>2. Drawings:</p> <p><input type="checkbox"/> received:</p> <p><input type="checkbox"/> not received:</p>
<p>3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:</p>	
<p>4. Date of timely receipt of the required corrections under PCT Article 11(2):</p>	
<p>5. International Searching Authority (if two or more are competent): ISA /</p>	<p>6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid</p>

For International Bureau use only
<p>Date of receipt of the record copy by the International Bureau:</p>

METHOD FOR THE HAULAGE OF SUBSURFACE-MINED MATERIAL AS WELL
AS DEVICE FOR CARRYING OUT SAID METHOD

The invention pertains to a method and an arrangement for the haulage of subsurface-mined material.

There exist various methods for the haulage in subsurface mining. It is known, in particular, to initially create driving roadways, on which the desired material is obtained laterally of the roadway. In addition to so-called "longwall mining," a method of this type has also become known, for example, as a "room and pillar" method, in which the material is mined from rooms and pillars are respectively left standing in order to support the roofs. Subsurface haulage means, for example, in the form of extendible conveyor belts are usually arranged in the roadway. It is also known to realize such subsurface haulage means in the form of overhead conveyors or haulage means that are suspended from the roof. If it is intended to employ a "room and pillar" method, it is therefore common practice to drive a roadway, the width of which essentially corresponds to the width of the tunneling machine, wherein further mining is then carried out laterally of this roadway. In order to allow an efficient haulage of the materials mined during the driving of the roadway, it is known to utilize so-called "shuttle" vehicles that transport material back and forth between the tunneling machine and therefore the heading face and a stationary haulage device that is arranged in the roadway further toward the rear. In this respect, we refer, for example, to US 2 282 704 A. However, a passing option for such vehicles is not provided in the region of this roadway such that two vehicles traveling in opposite directions cannot pass or cross one another and the vehicles therefore need to travel the distance between the heading face and the stationary haulage means as fast as possible, namely also in relatively tight curves. If the vehicles need to

travel, in particular, longer distances between the material pick-up directly behind the tunneling machine and the transfer to the stationary haulage means in the roadway, the transport with such shuttle vehicles represents the step of the mining process that defines the speed.

The invention is based on the objective of improving the haulage capacity in the initially cited driving of roadways, namely also if the distances between the material pick-up and the material transfer are relatively long, and to largely eliminate standstill times, wherein the invention also aims to develop interchangeable vehicles that can be used very flexibly and are able, in particular, to negotiate curves very well.

According to the inventive method, this objective is essentially attained in that at least two vehicles that respectively feature a travel drive are used in the roadway section between the heading face and haulage means that are continuously extended, wherein at least one material transfer from one vehicle to another vehicle takes place between the heading face and the transfer of the material to the haulage means. Since at least two vehicles are used in the roadway section between the heading face and a haulage means that is continuously extended, it is possible to increase the flexibility by utilizing several vehicles of preferably identical design in order to minimize the required time. To this end, it is merely required to carry out the method such that one vehicle completely transfers the respective material picked up near the heading face to another vehicle such that this vehicle no longer has to travel the entire distance between the heading face or the tunneling machine and the stationary haulage means. Such an optimization merely requires that the method is carried out such that the transfer of the material from one vehicle to another vehicle requires less time than that required for

traveling the respective additional distance, i.e., a single or multiple transfer to succeeding vehicles respectively creates free capacities that also ensure the continuous haulage of the material mined by the tunneling machine if the stationary haulage means is not extended as far as the heading face. According to the invention, the method is carried out such that at least one material transfer from one vehicle to another vehicle takes place between the heading face and the transfer of the material to the haulage means.

The realization of this method requires correspondingly adapted vehicles, wherein these vehicles not only need to be highly flexible and able to negotiate curves very well, but also fulfill the constructive prerequisites for the transfer of the material from one vehicle to the succeeding vehicle. It is particularly advantageous to realize the inventive arrangement for the haulage of subsurface-mined material in such a way that at least two vehicles featuring a travel drive are provided, wherein material can be respectively loaded on said vehicles with a first haulage means and material is transferred to another haulage means from said vehicles, and wherein the vehicles feature linear conveying devices, e.g., conveyor belts, and at least one linear conveying device of each vehicle is arranged on the vehicle frame such that it can be raised and lowered, as well as displaced in the conveying direction. The at least two vehicles may be realized identically in this embodiment such that they can be flexibly interchanged, wherein the linear conveying devices arranged on the vehicle itself make it possible to load the vehicle as quickly and as completely as possible, namely even if the transfer takes place on one end of the vehicle only. Consequently, the material transferred onto the end of the vehicle or above the end of the vehicle is moved into a position by the conveying device that lies near the front end thereof such that new material can be continuously loaded onto the rear

end. With respect to the material transfer, it is particularly advantageous to transfer the material as far as possible from the rear end of the vehicle, particularly near the center of the conveying means, in order to achieve a particularly advantageous broken material contour and to allow the haulage of large quantities with small-size vehicles. In order to enable each of these vehicles to transfer the picked-up material to a succeeding vehicle, the arrangement according to the invention is realized such that at least one linear conveying device is arranged on the vehicle frame of each vehicle in such a way that it can be raised and lowered as well as displaced in the conveying direction. Such a displacement of the conveying device in the longitudinal direction of the vehicle and the simultaneous raising of the drop-off end make it possible to quickly transfer the material to a succeeding vehicle such that the vehicle emptied in this fashion can travel back to the heading face. In the preferred embodiment of the inventive vehicle, it is by no means necessary to realize the entire linear conveying device such that it can be displaced in the longitudinal direction of the vehicle. On the contrary, it suffices to design the conveying device such that a conveying means realized separately of the linear conveying device can be retracted into the vehicle frame underneath the linear conveying device and raised in an extended position.

A very flexible design and, in particular, an adequate drop-off characteristic can be achieved if the linear conveying devices of the vehicle feature at least one articulated axle that extends transverse to the conveying direction. In this case, the conveying devices are advantageously designed such that the sections of the linear conveying devices of each vehicle are interconnected in an articulated fashion, as well as to separate actuating drives for raising and lowering the sections. The ability to longitudinally displace raisable sections of this type

can be achieved in a particularly simple fashion if at least one section of the linear conveying device is realized in the form of a sled or connected to a sled that can be displaced in the longitudinal direction of the vehicle.

The ability to negotiate curves particularly well can be ensured in vehicles of this type by realizing the linear conveying device and, if applicable, the additional separate conveying means such that they can be retracted into a position that essentially lies within the outline of the vehicle in a top view thereof.

This means that, in principle, two types of vehicles are provided that can be interchanged and may also be simply realized identically in order to simplify the maintenance and the stock keeping of spare parts. The first of these vehicle types features a second, extendible conveying device underneath a chain conveyor that is essentially non-displaceable in the longitudinal direction of the vehicle, wherein this second conveying device can be adjusted with respect to its height and extended in a cantilever fashion for the transfer of the material from one vehicle to another vehicle. In the second vehicle type, the entire conveyor is displaced in the longitudinal direction of the machine for the material transfer and preferably realized in an articulated fashion in order to achieve the corresponding transfer height.

Such a choice of identical vehicles also provides the additional advantage that the vehicles can be randomly interchanged and, in particular, longer sections between the heading face and the stationary haulage means can be covered by using a corresponding number of vehicles in order to optimize the overall time required for the haulage. Consequently, the optimization is realized by selecting a suitable number of transport vehicles, as well

as the suitable transfer point in the roadway section to be traveled between the heading face and the stationary haulage device.

The invention is described in greater detail below with reference to one embodiment that is schematically illustrated in the drawings. In these drawings, Figure 1 shows a schematic side view of a first type of vehicle suitable for carrying out the method according to the invention, Figure 2 shows a correspondingly modified embodiment and Figure 3 shows the course of the roadway and the transfer point in the roadway between two such vehicles that cover the distance between the heading face and the stationary haulage means.

Figure 1 shows two vehicles 1 and 2 that respectively feature linear conveying means 3 and 4. These two linear conveying means 3 and 4 may be interconnected rigidly or in an articulated fashion. An additional linear conveying means 5 is arranged underneath the front section of the conveying means. This additional linear conveying means 5 can be displaced in the longitudinal direction of the vehicle by means of a slide track 6 as indicated with the double arrow 7 and raised accordingly in the overhanging position by means of a piston-cylinder unit 8 so as to achieve a corresponding drop-off parabola during the transfer to a succeeding vehicle 2.

In the embodiment according to Figure 2, the separate additional conveying device 5 is eliminated. In this case, the two sections 3 and 4 of the linear conveying means are interconnected in an articulated fashion and displaced in the longitudinal direction of the machine by means of a hydraulic piston-cylinder unit 9, wherein said sections can be raised accordingly in the transfer position by means of the hydraulic piston-cylinder unit 10 in order to achieve an optimal transfer to the succeeding vehicle 2.

The reference symbol 11 in Figure 3 schematically indicates the position of the tunneling machine for driving the roadway in the direction of the arrow 12. The stationary haulage means is schematically indicated with the reference symbol 13 and situated in another, already driven roadway 14. The extension of this haulage means 13 ends at the position 15 such that the distance between the tunneling machine 11 and therefore the heading face and the end of the extension 15 needs to be covered with corresponding vehicles as they are illustrated in Figures 1 and 2. For this purpose, the vehicles initially travel opposite to the direction of the arrow 12 and subsequently to the already driven roadway 14 containing the haulage means 13 via a crossway 16. Since this distance is relatively long, two vehicles of the type illustrated in Figure 1 and Figure 2 are used for covering this section, wherein the transfer point is situated at the position 17 in the crossway 16. Consequently, a first vehicle 1 receives the material mined by the tunneling machine 11 and transports this material to the transfer point 17 where it is transferred to a second vehicle 2 that subsequently transfers the material to the haulage means at the position 15. The first vehicle can travel forward to the meanwhile additionally advanced tunneling machine 11 in order to pick up and haul new material while the second vehicle travels the distance from the transfer point 17 to the stationary haulage means 15.

CLAIMS

1. A method for the haulage of subsurface-mined material with at least one vehicle featuring a travel drive, characterized in that at least two vehicles are used in the roadway section between the heading face and a continuously extended haulage means, wherein at least one material transfer from one vehicle to another vehicle takes place between the heading face and the transfer of the material to the haulage means.
2. A device for the haulage of subsurface-mined material with at least one vehicle featuring a travel drive, wherein material is loaded on the at least one vehicle with a first haulage means and transferred to another haulage means, characterized in that at least two vehicles are provided that feature linear conveying devices, e.g., conveyor belts, and wherein at least one linear conveying device of each vehicle is arranged on the vehicle frame such that it can be raised and lowered, as well as displaced in the conveying direction.
3. The device according to claim 2, characterized in that the linear conveying devices of the vehicle feature at least one articulated axle that extends transverse to the conveying direction.
4. The device according to claim 2 or 3, characterized in that the sections of the linear conveying device of each vehicle that are interconnected in an articulated fashion are connected to separate actuating drives for raising and lowering the sections.
5. The device according to one of claims 2-4, characterized in that at least one section of the linear conveying device is realized in the form of a

sled or connected to a sled that can be displaced in the longitudinal direction of the vehicle.

6. The device according to one of claims 2-5, characterized in that a conveying means realized separately of a linear conveying device is arranged underneath the linear conveying device such that it can be retracted into the vehicle frame and raised in an extended position.
7. The device according to one of claims 2-6, characterized in that the linear conveying device and, if applicable, the additional separate conveying means are realized such that they can be retracted into a position that essentially lies within the outline of the vehicle in a top view thereof.

ABSTRACT:

Method for the haulage of subsurface-mined material as well as device for carrying out this method

In a method for the haulage of subsurface-mined material with at least one vehicle featuring a travel drive, at least two vehicles are used in the roadway section between the heading face and a continuously extended haulage means, wherein at least one material transfer from one vehicle to another vehicle takes place between the heading face and the transfer of the material to the haulage means. (Fig. 1)